South Dakota Department of Health

PUBLIC HEALTH BULLETIN

VOLUME 19 NUMBER 3 **JUNE 2007**

Cystic fibrosis added to South Dakota's newborn screening mandated panel

The South Dakota Newborn Screening Program has updated administrative rule 44:19:01:04 to include cystic fibrosis (CF) as part of the state's newborn screening panel. Cystic fibrosis screening was previously optional. The change went into effect June 1, 2007.

According to the Centers for Disease Control and Prevention (CDC), cystic fibrosis is the second most common life-shortening, childhood-onset inherited disorder in the United States. Each year, approximately 1,000 persons in the United States are diagnosed with CF.

The University of Iowa Hygienic Laboratory (UHL) will provide laboratory testing for South Dakota's program according to the following two-tiered screening approach. The immunoreactive trypsinogen (IRT) will be used as an initial screen. If the IRT level is in the highest 5% of the daily results, DNA will be extracted from the same specimen card and analysis of the Cystic Fibrosis Transmembrane Conductance Regulator (CFTR) gene to detect CF related mutations would be performed.

UHL will report the following screening results

- **Negative Cystic Fibrosis** – newborn will have no CFTR mutant alleles detected with the IRT<170 ng/ml
- **Possible Cystic Fibrosis** – newborn will have no CFTR mutant alleles detected with the IRT> or equal to 170 ng/ml
- **Possible Cystic Fibrosis** - newborn will have one CFTR mutant allele detected
- **Definite Cystic Fibrosis** – newborn will have two CFTR mutant alleles detected

Newborns with possible or definite screening results need sweat chloride testing at a Cystic Fibrosis Foundation accredited care center to confirm or rule out the diagnosis of CF. In South Dakota this site is located at Sanford Health in Sioux Falls. Further information can be obtained by calling 1-800-557-4893.

In addition, the Department of Health, Children's Special Health Services, can provide services to identify and coordinate the health care and other related services for families and children with cystic fibrosis. Contact Children's Special Health Services at 1-800-305-3064.

Direct questions about the updated screening panel to Terry Disburg, RN, at (605) 773-3737.

resistant TB case and 1 INH and PZA resistant TB case. There were no HIV co-infected TB cases and no TB cases reported in correctional facilities. There was 1 TB case reported from a long-term care facility. During 2005, there were no TB cases reported in children aged 19 years or less of age.

2006 South Dakota Oral Health Survey

By Jacy Clarke, MPH, Chronic Disease Epidemiologist
Office of Health Promotion, South Dakota Department of Health

Oral disease is progressive and cumulative and becomes more complex over time. If left untreated, tooth decay can lead to needless pain and suffering; difficulty in speaking, chewing, and swallowing; missed school days; increased cost of care; the risk of other systemic health problems; and loss of self-esteem. Emerging research points to associations between oral disease and diabetes, heart and lung disease, and adverse pregnancy outcomes (US Dept. of Health and Human Services, 2000).

During the 2005-2006 academic school year, the South Dakota Department of Health, Oral health Program, in collaboration with the South Dakota Dental Association, conducted a statewide dental survey to determine the oral health status of South Dakota children and develop recommendations to improve oral health. Results were compared to a similar dental survey conducted in 2003. Overall, it was found that in 2006, tooth decay, the single most common chronic childhood disease, continued to be a major problem for South Dakota's children.

Key Findings

- Sixty-six percent of the children had cavities and/or fillings (decay experience) and 33 percent of the children had untreated dental decay (cavities). Dental decay is a significant public health problem for South Dakota's children.
- Thirty-nine percent of the children did not have dental sealants. In 2006, 61% of the 3rd grade children screened had dental sealants compared to 50% in 2003. Seventy percent of American Indian children had dental sealants in 2006. During the last three years, the prevalence of dental sealants has increased dramatically in South Dakota. While dental sealants are a proven method for preventing decay, many of South Dakota's children have not received this preventive service.
- Thirty-three percent of the children were in need of dental care including 6 percent that needed urgent dental care because of pain or infection. A large proportion of South Dakota's children are in need of dental care.
- Compared to white non-Hispanic children, a significantly higher proportion of American Indian children have decay experience (62% vs. 84%) and untreated decay (28% vs. 51%).
- Forty-one percent of children that participate in the free/reduced price school lunch program had untreated decay compared to only 27% of children not eligible for the program. Low income children have poorer oral health.

Oral Health Status of Target Populations

Pregnancy – In 2005, the South Dakota Maternal and Child Heath Program conducted a survey of new moms throughout the state. Less than half (42%) of pregnant women received information from their physician on the importance of care of their teeth and gums (Perinatal Health Risk Assessment Report, 2005).
Diabetes – Data from a 2007 CDC report shows that the percentage of diabetic adults in South Dakota receiving dental care has decreased. In 2004, 64% of adults with diabetes had been to the dentist in the past year, while in 1999 71% had a dental visit in the past year (CDC, 2007). Among all adults in South Dakota, only 27% had visited the dentist or dental clinic within the past year for any reason (BRFSS, 2003). In South Dakota, 65% of full-time employees are offered dental insurance; while only 18% of part-time workers are offered dental insurance. Those with dental insurance are almost one and a half times more likely to visit the dentist than those without dental insurance.
Cancer – In 2005, there were 21 deaths due to lip, oral cavity, and pharynx cancer. Eleven of the 21 deaths were directly due to tobacco use. In South Dakota, mortality due to lip, oral cavity, and pharynx cancer increased significantly from 12 (2004) to 21 (2005) (South Dakota Vital Statistics, 2005).

Emergency Dental Care in South Dakota

In 2006, the South Dakota Oral Health Program conducted a survey of 11 Emergency Room Directors throughout the state. South Dakota hospital emergency rooms do not have policy in place to care for dental emergencies and lack specific dentists and/or oral surgeons to refer patients to (Emergency Room Dental Care Report, 2006).

Coalition/Community Activity

According to the United States Surgeon General's Oral Health Report (2000), "you cannot be healthy without oral health. Oral health and general health should not be interpreted as separate entities. Oral health is a critical component of health and must be included in the provision of health care and the design of community programs".

Approximately 78% of South Dakota's population lives in communities that fluoridate their drinking water. Municipalities that serve over 500 residents are federally mandated to fluoridate the drinking water in accordance with EPA guidelines. South Dakota communities began fluoridating their drinking water supplies in the early 1980's. Fluoridation, recognized as one of the ten greatest public health achievements of the 20th century, is a safe and cost-effective means of preventing tooth decay.

The South Dakota Oral Health Coalition hosted and celebrated the anniversary of its fifth Oral Health Summit on April 13th. Since the Coalition was formed in the spring of 2002, its members have achieved many goals in improving oral health among South Dakotans. Attendees celebrated the successes over the past five years and discussed additional coalition projects to set a course for future activities. This planning included evidence-based data from the 2006 Oral Health Survey and the Snapshot of Oral Health in SD.

West Nile virus in South Dakota: human epidemiology of the first 5 years, 2002 – 2006

by Lon Kightlinger, MSPH, PhD, State Epidemiologist, South Dakota Department of Health

West Nile virus (WNV) is a mosquito-borne flavivirus first described in Uganda, East Africa, in 1937. Sixty-two years later the virus was first detected in North America during the summer of 1999 in New York City. Over the next three years WNV swarmed across North America, reaching South Dakota and the Rocky Mountains in 2002. By 2006 WNV had spread to all contiguous 48 States and was enzootic in most of North America. West Nile virus is expected to persist as a public health threat to South Dakota into the foreseeable future.

Although birds are the primary reservoir of WNV, humans are among the accidental mammalian hosts. Human infection is generally asymptomatic, but approximately 20% of human infection causes acute febrile illness (WN fever) and about 1% develop more severe neuroinvasive syndromes including meningitis, encephalitis and acute flaccid paralysis or poliomyelitis. Approximately 10% of WNV neuroinvasive cases are fatal. Since WNV disease is a relatively recent occurrence in the United States the long-term health sequelae of those infected are not yet well understood.

Acute clinical features of human WNV syndromes(1)

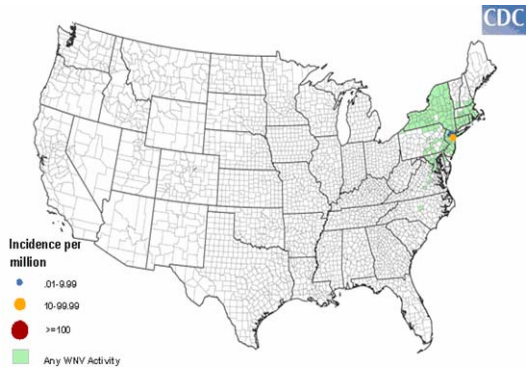
WNV syndrome	Acute clinical features	Case-fatality rate
WN fever	Abrupt onset of fever, headache, malaise, fatigue, anorexia, and nausea.	<1%
WN meningitis	Symptoms of WNF, plus meningismus (nuchal rigidity, photo- and phonophobia); cerebrospinal fluid with pleocytosis; WBC count generally !500 cells/mm^3	<1%
WN encephalitis	Symptoms of WNF, plus encephalopathy (altered mental status, lethargy), and/or focal neurologic signs (weakness, cranial nerve palsies); movement disorders, including tremor, parkinsonism, and ataxia, may be frequent	20%
WN poliomyelitis	Acute onset of limb weakness or paralysis; weakness is typically asymmetric and abrupt; involved limbs typically are flaccid and are flexic; respiratory muscles may be involved; WNP may occur in the absence of fever or other features suggestive of WNV infection	10% - 50%

Since 1999 there have been 23,975 report cases of human WNV disease and 962 WNV-associated deaths in the United States. In South Dakota 1,469 human WNV disease, including 264 cases of WNV neuroinvasive disease and 20 WNV-associated deaths, have been reported since 2002 when the virus was first detected in this state. The peak outbreak year in South Dakota was 2003 when 1,039 human WNV cases and 14 deaths were reported. During the past 5 years there have also been 94 viremic blood donors, 2 cases of WNV transmission through blood transfusion(2), and 13 cases of pregnancy-associated WNV illness(3) reported in South Dakota.

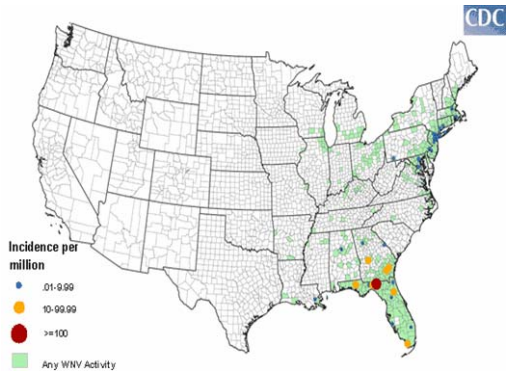
WNV human neuroinvasive disease incidence, United States 1999-2006
(cases per million population) and any WNV activity

1999

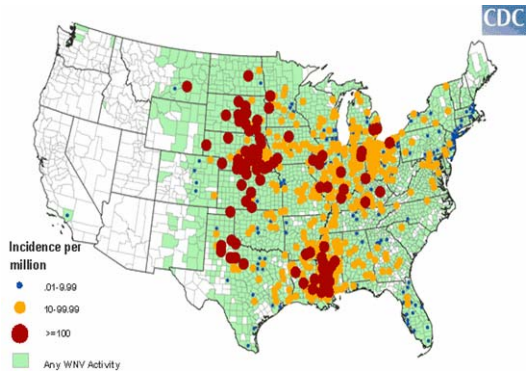
2000



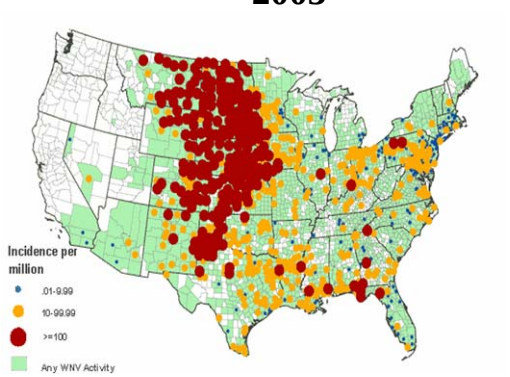
2001



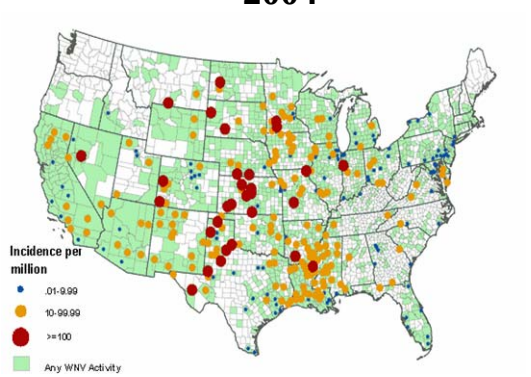
2002



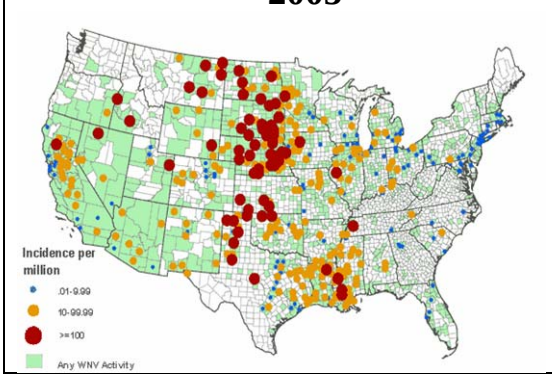
2003



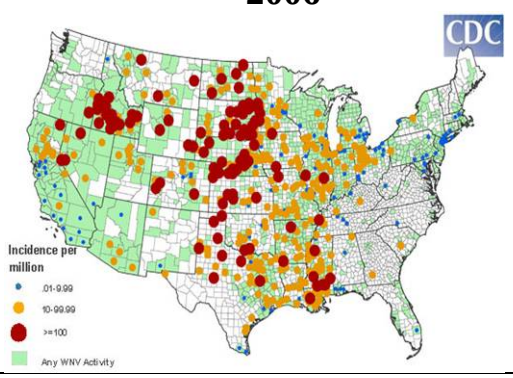
2004



2005



2006

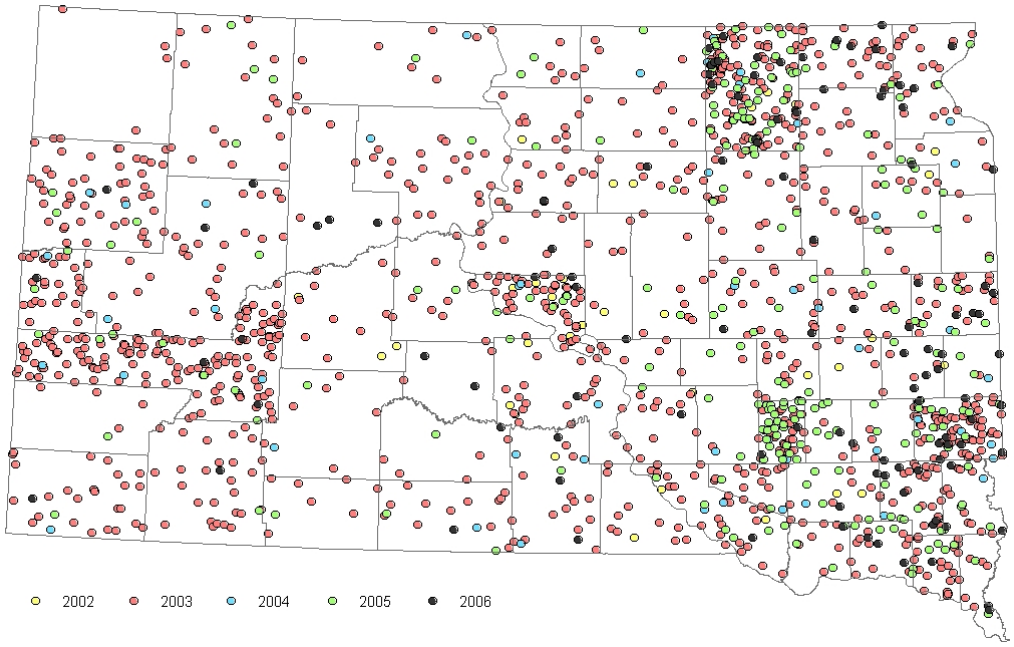


West Nile virus human cases, United States and South Dakota, 1999 - 2006									
United States	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**Total**
All human cases	62	21	66	4156	9862	2539	3000	4269	**23,975**
WNV fever	3	2	2	1160	6830	1269	1607	2616	**13,489**
WNV neuroinvasive	59	19	64	2946	2866	1142	1294	1459	**9849**
Viremic blood donors	SNA	SNA	SNA	SNA	818	224	417	361	**1,820**
Deaths	7	2	9	284	264	100	119	177	**962**
South Dakota									
All human cases	0	0	0	37	1039	51	229	113	**1,469**
WNV fever	0	0	0	23	868	45	194	75	**1,205**
WNV neuroinvasive	0	0	0	14	171	6	35	38	**264**
Viremic blood donors	SNA	SNA	SNA	SNA	60	3	19	12	**94**
Deaths	0	0	0	0	14	1	2	3	**20**

SNA: screening not available.

States in the upper Great Plains region of the United States have had the highest average annual incidence of WNV neuroinvasive illness. The top 10 highest incidence states include South Dakota 64.1 neuroinvasive cases per million population, Wyoming 56.8, Nebraska 44.1, North Dakota 41.3, Colorado 32.8, Idaho 28.5, Mississippi 24.5, Louisiana 22.1, Montana 21.4 and New Mexico 16.8.

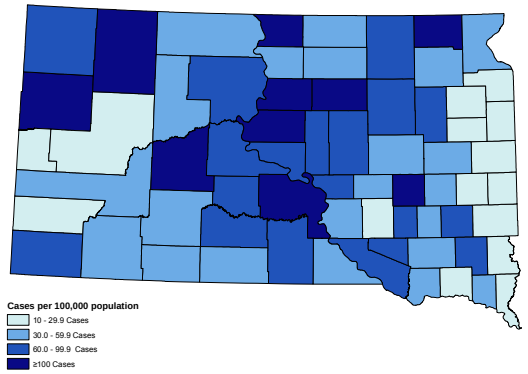
Distribution of human WNV cases, South Dakota, 2002-2006



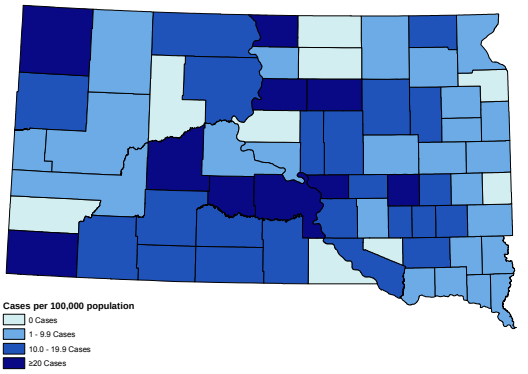
Random dot distribution with counties.

Human WNV cases have been reported in residents of all 66 South Dakota counties over the 5 years since WNV appeared, 2002-2006. Counties in the state's central zone generally have had higher incidence of WNV cases and neuroinvasive WNV cases.

All human West Nile disease incidence (average annual cases per 100,000 population), 2002-2006



Human West Nile neuroinvasive incidence (average annual cases per 100,000 population), 2002-2006



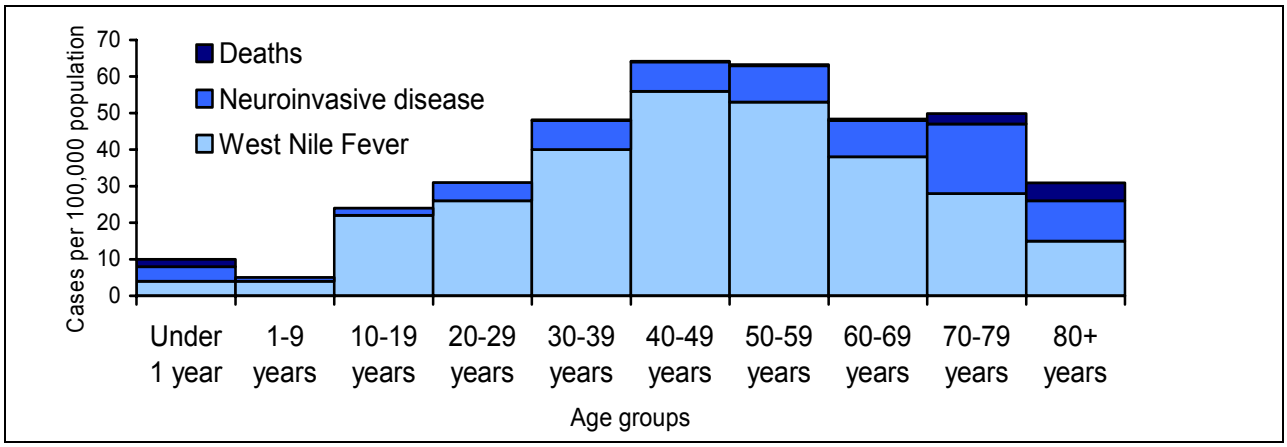
South Dakota males have been disproportionately affected by WNV. Of the 1,469 WNV cases reported 56% have been male, and notably 60% of neuroinvasive cases and 75% of deaths have been male. Ninety percent of WNV cases have been white race South Dakotans and 9% of cases have been American Indian. The more severe aspects of WNV had a greater race disparity with 17% of neuroinvasive cases and 15% of deaths were among American Indians.

Human WNV cases in South Dakota counties, 2002-2006

Aurora	4	Day	14	Jackson	8	Perkins	22
Beadle	26	Deuel	3	Jerauld	4	Potter	16
Bennett	8	Dewey	25	Jones	4	Roberts	25
BonHomme	11	Douglas	16	Kingsbury	16	Sanborn	16
Brookings	32	Edmunds	9	Lake	13	Shannon	29
Brown	159	Fall River	28	Lawrence	31	Spink	26
Brule	15	Faulk	13	Lincoln	20	Stanley	12
Buffalo	7	Grant	11	Lyman	23	Sully	9
Butte	54	Gregory	12	Marshall	32	Todd	16
Campbell	8	Haakon	12	McCook	10	Tripp	22
CharlesMix	38	Hamlin	6	McPherson	7	Turner	33
Clark	12	Hand	11	Meade	33	Union	9
Clay	26	Hanson	10	Mellette	7	Walworth	10
Codington	13	Harding	4	Miner	6	Yankton	18
Corson	9	Hughes	59	Minnehaha	86	Ziebach	7
Custer	5	Hutchinson	17	Moody	5		
				Penningto		**TOTAL**	**1,469**
Davison	59	Hyde	6	n	152		

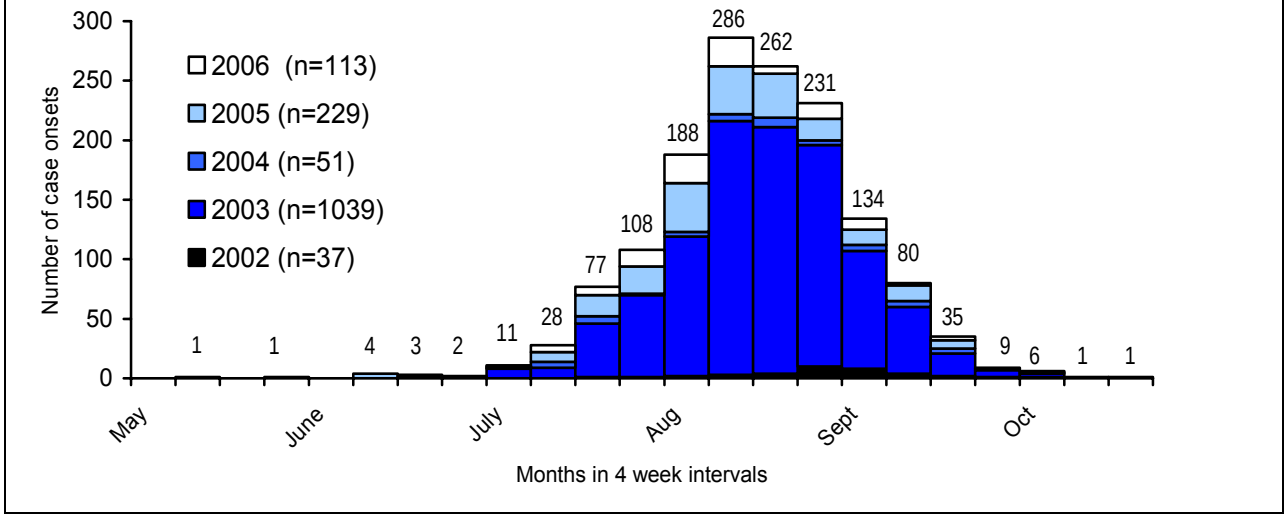
People in all age groups have been infected and sickened by WNV in South Dakota. The elderly are at highest risk of developing WN neuroinvasive disease. Overall 18% of cases (263/1467) developed WN neuroinvasive disease. This increases to 41% for people 70 years and older (65/157). Seventy-five percent of WNV-associated deaths were individuals over 70 years old (15/20).

Incidence of West Nile disease and death by age, South Dakota, 2002-2006 (mean annual incidence per 100,000 population)



West Nile disease is a seasonal illness in South Dakota associated with the ecology of the *Culex tarsalis* mosquito vector. Following the bite of a WNV infectious mosquito there is a 2 to 15 day incubation period before a person becomes ill. Although cases have occurred from May to October in South Dakota, 99% of case illness onsets were during July, August and September, with 66% of cases occurring during August. The second week of August is the peak risk period in South Dakota.

Human West Nile disease onset by month/week, South Dakota 2002-2006

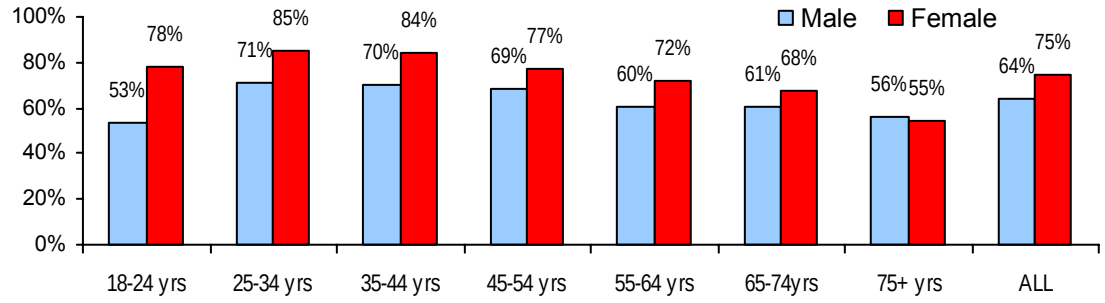


As we enter the sixth season of WNV transmission in South Dakota, and the ninth year in the United States, a human vaccine is still not licensed, and specific treatment regimes are experimental. The lack of vaccine prevention and medical treatment leaves mosquito avoidance and mosquito control as the primary means of WNV prevention. Mosquito avoidance includes limiting time outdoors, screening doors and windows, bed nets, avoiding infested areas and discouraging mosquito bites by using repellents containing DEET, Picaridin or Oil of Lemon Eucalyptus. Mosquito contr1ol measures include elimination of standing water on personal and public property, and community-wide mosquito larval control and adulticide spraying.

Taking personal protective measures against WNV carrying mosquitoes is essential. Seventy percent of adult South Dakotans say they took any precautions against West Nile virus when asked by BRFSS surveyors (6,675 surveyed in SD Behavior Risk Factor Surveillance System 2005). The precautions against WNV included 66% of respondents using mosquito repellents, 49% checked their property for standing water mosquitoes breeding sites, 38% wore long pants and long sleeved shirts, and 27% stated they avoided outdoor activity. Women (75%) were more

likely to protect themselves than men (64%). Although the elderly are at higher risk of severe WNV disease, the elderly were significantly less likely to protect themselves from mosquitoes: 77% of young adults 35-44 years old took precautions, whereas only 55% of elderly adults, 75 years and older, took precautions. The group most likely to take precautions is 25 to 34 year old women.

South Dakota adults who take any precautions against West Nile virus (BRFSS 2005)



It is concerning that individuals with underlying medical conditions making them more susceptible to severe WNV disease were less likely to use precautions. According to the 2005 BRFSS survey 62% of respondents with heart disease used precautions, whereas 70% of those without heart disease used precautions; 66% with hypertension took precautions, compared to 71% of those normal blood pressure; 67% of those with diabetes used precautions, whereas 70% of those without diabetes used precautions.

Over the past 5 years human WNV infection has caused extensive disease and death in South Dakota. This mosquito-borne virus is likely to persist as a public health threat into the foreseeable future.

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1. Sejvar, J., The long-term outcomes of human West Nile virus infection. 2007. Clinical Infectious Diseases, 44: 1617–1624.

2. Kightlinger, L., S. Brend, J Gorlin, M Kemperman, M. Kuehnert, J Sejvar, G. Campbell, E. Farnon, K. Ellingson. 2007. West Nile Virus transmission through blood transfusion – South Dakota, 2006. CDC, MMRW 56: 76-79.

3. O'Leary, D., S. Kuhn, K. Kniss, A. Hinckley, S. Rasmussen, W. Pape, L. Kightlinger, B. Beecham, T. Miller, D. Neitzel, S. Michaels, G. Campbell, R. Lanciotti, E. Hayes. Birth outcomes following West Nile Virus infection of pregnant women in the United States: 2003-2004. Pediatrics. 2006, 117: e537-45.

South Dakota Department of Health - Infectious Disease Surveillance

Selected Morbidity Report, 1 January – 30 April 2007 (provisional)

Disease		2007 year-to-date	5-year median	Percent change
Vaccine-Preventable Diseases	Diphtheria	0	0	na
	Tetanus	0	0	na
	Pertussis	12	7	+71%
	Poliomyelitis	0	0	na
	Measles	0	0	na
	Mumps	1	0	na
	Rubella	0	0	na
	Haemophilus influenza type b	0	0	na
Sexually Transmitted Infections and Blood-borne Diseases	HIV infection	7	10	-30%
	Hepatitis B, acute	1	0	na
	Chlamydia	828	831	0%
	Gonorrhea	95	87	+9%
	Herpes, genital or neonatal	128	115	+11%
	Syphilis, early	1	0	na
Tuberculosis	Tuberculosis	3	6	-50%
Invasive Bacterial Diseases	*Neisseria meningitidis*	1	1	0%
	Invasive Group A *Streptococcus*	3	8	-63%
Enteric Diseases	*E. coli*, shiga-toxin producing	1	2	-50%
	Campylobacteriosis	31	36	-14%
	Salmonellosis	43	26	+65%
	Shigellosis	12	8	+50%
	Giardiasis	16	26	-38%
	Cryptosporidiosis	19	9	+111%
	Hepatitis A	2	2	0%
Vector-borne Diseases	Animal Rabies	2	31	-94%
	Tularemia	0	0	na
	Rocky Mountain Spotted Fever	0	0	na
	Malaria (imported)	0	0	na
	Hantavirus Pulmonary Syndrome	0	0	na
	Lyme disease	0	0	na
	West Nile Virus disease	0	0	0
Other Diseases	*Streptococcus pneumoniae*, drug-resistant	6	1	+500%
	Legionellosis	1	1	0%
	Additionally, the following diseases were reported: Chickenpox (39); Group B *Strep*, invasive (3); Hepatitis B, chronic (10); Hepatitis C, chronic (83); MRSA, invasive (25), Q fever (1).			

Communicable diseases are obligatorily reportable by physicians, hospitals, laboratories, and institutions.
The **Reportable Diseases List** is found at www.state.sd.us/doh/Disease/report.htm or upon request.
Diseases are reportable by telephone, mail, fax, website or courier.
Telephones: 24 hour answering device 1-800-592-1804; for a live person at any time call 1-800-592-1861; after hours emergency 605-280-4810. **Fax** 605-773-5509.
Mail in a sealed envelope addressed to the DOH, Office of Disease Prevention, 615 E. 4th Street, Pierre, SD 57501, marked "Confidential Medical Report". **Secure website:** www.state.sd.us/doh/diseasereport.htm.

2,900 copies of this Bulletin were printed by the Department of Health at a cost of $0.29 per copy.